Intelligent Complex Adaptive Systems

Table of Contents

Foreword ................................................................. vi
Preface ................................................................. viii

Section I
General Theories

Chapter I
From Reductive to Robust: Seeking the Core of Complex Adaptive Systems Theory ................................................................. 1
  Steven E. Wallis, Independent Consultant, USA

Chapter II
Method of Systems Potential as “Top-Bottom” Technique of the Complex Adaptive Systems Modelling ........................................... 26
  Grigorii S. Pushnoi, St. Petersburg, Russia
  Gordon L. Bonser, California, USA
Section II
Important Concepts

Chapter III
Modularity and Complex Adaptive Systems........................................75
David Conforth, University of NSW, Australia
David G. Green, Monash University, Australia

Chapter IV
Concept and Definition of Complexity................................................105
Russell K. Standish, UNSW, Australia

Section III
Computing Perspectives

Chapter V
Emergence of Creativity: A Simulation Approach...............................126
Hrafn Thorri Thórisson, Reykjavik University, Iceland

Chapter VI
Solving the Sensory Information Bottleneck to Central Processing in Adaptive Systems........................................................159
Thomy Nilsson, University of Prince Edward Island, Canada

Chapter VII
Complexity, Information, and Robustness: The Role of Information “Barriers” in Boolean Networks........................................187
Kurt A. Richardson, ISCE Research, USA

Chapter VIII
Emergent Specialization in Biologically Inspired Collective Behavior Systems .................................................................215
G. S. Nitschke, Vrije Universiteit, The Netherlands
M. C. Schut, Vrije Universiteit, The Netherlands
A. E. Eiben, Vrije Universiteit, The Netherlands
Section IV
Social Science Perspectives

Chapter IX
Emergence in Agent-Based Computational Social Science:
Conceptual, Formal, and Diagrammatic Analysis .......................255
Jean Louis Dessalles, ENST, Paris, France
Jacques Ferber, LIRMM, CNRS, & University of Montpellier, France
Denis Phan, GEMAS, CNRS, and University of Paris IV Sorbonne, & CREM, CNRS, and University of Rennes I, France

Chapter X
Ontological Reflections on Peace and War ............................300
Hayward R. Alker, University of Southern California & Watson Institute, Brown University, USA

Chapter XI
The Allocation of Complexity in Economic Systems ................331
Jason Potts, University of Queensland & Queensland University of Technology, Australia
Kate Morrison, Volterra Pacific Pty. Ltd., Australia
Joseph Clark, University of Queensland & Suncorp Pty. Ltd., Australia

About the Contributors ..........................................................351

Index .......................................................................................358